

The Importance of Moisture / Humidity Control



Ecomerchant Fact Sheet No3

Seasonal Changes in Timber Moisture Content and Condensation

Despite day-to-day fluctuations, the average outdoor relative humidity actually changes little from season to season. However, inside the home the relative humidity of outdoor air drawn inside is drastically altered by heating it and cooling it, without humidification or dehumidification. It is these extreme seasonal swings in relative humidity that may disrupt the wood moisture content and cause structural alterations of the timber through changes in dimensions. Our design incorporates and allows for this movement and may require adjustment depending on the amount of structural alteration that occurs.

Condensation

The air which surrounds us in our homes, always contains water vapour, which is usually invisible. The warmer the air, the more water vapour it can hold. However, there is a limit to the amount it can hold for a given temperature. When that limit is reached, the air is said to be 'saturated'. When saturated air comes into contact with a surface, which is at a lower temperature than itself, the air is chilled at the point of contact and sheds its surplus water vapour on that surface - initially in the form of a mist and, if excessive, eventually in the form of droplets of moisture.

The increased incidence of condensation in today's buildings is the direct result of changes in modern living conditions, which have led to warmer and more comfortable rooms. Modern buildings are designed to eliminate draughts and do not have the natural ventilation found in some older houses. Provided the rooms are heated normally, the solution will probably be found by providing controlled ventilation. Some examples of where the water vapour comes from:

- Breathing: Two sleeping adults produce 1½ pints of moisture in 8 hours, which is absorbed as water vapour into the atmosphere.
- Cooking: Steam clouds can be seen near saucepans and kettles, and then seem to disappear. The clouds have been absorbed into the atmosphere. The cooker itself may be a source of water vapour e.g. an average gas cooker could produce approximately 1½ pints of moisture per hour.
- Washing up: The vapour clouds given off by the hot water are rapidly absorbed into the atmosphere.
- Bathing, laundry, and wet outer clothing: These are often the major sources of water vapour in the home.
- Heaters: A flueless gas heater can produce up to 2/3 pint of moisture per hour.
- Paraffin heaters produce 9 pints of moisture for every 8 pints of fuel burned.
- Indoor Plants: A frequently unrecognised, but nevertheless significant source of water vapour.
- New Property: The bricks, timber, concrete and other materials in an average three bed house absorb about 1500 gallons of water during construction. Much of this is dissipated into the indoor atmosphere during the drying out period.

How to reduce the condensation forming on the inner (room-side) surface of the glass:

- Provide natural ventilation through an opening section of the window, or through a proprietary ventilating unit, or through an air brick.
- Open at least one window in each room for some part of the day to permit a change of air.

- Ensure ventilation of all rooms where gas or oil heaters are used.
- Ventilate cooker hoods to the outside air.
- Ensure extractor fans are fitted and used in bathrooms.
- In cold weather, keep some form of heating on permanently in the house.
- Condensation can be caused by isolating the inner glass from the warm room air with heavy curtains when drawn. To allow free passage of warm air to the glass, position curtains 15cm to 20cm away from the window, and ensure there are sufficient gaps at the top and bottom to permit continuous circulation.

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